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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/771,396	02/05/2004	Masahiro Hojo	Q79731	3830
23373	7590	04/18/2005	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			LEE, RIP A	
			ART UNIT	PAPER NUMBER
			1713	

DATE MAILED: 04/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/771,396

Applicant(s)

HOJO ET AL.

Examiner

Rip A. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☒ Claim(s) 1, 4, 5 and 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 06-30-2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Objections*

1. Claim 1 is objected to because of the following informalities: In the description of dithiosulfate (V), the claim indicates that  $M^3$  is one equivalent of a metal ion. Since the single terminus of thiosulfate ion is monovalent, it would appear that the stoichiometry is incorrect for the claimed divalent ions (magnesium, calcium, barium, zinc, nickel, and cobalt). Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Component (1) of the claim is drawn to a rubber component including at least one of a polybutadiene rubber and a styrene-butadiene rubber. As written, the composition must contain both rubber resins. Component (2) of claim 1 is drawn to a rubber composition comprising at least one compound represented by formula (I), a compound of formula (II), a compound of formula (III), and a compound of formula (IV). As written, the composition must contain all four components. The examiner has turned to the specification for guidance, and there is no indication that both rubber components must be present, nor is there the requirement that all four materials need be present. It appears that improper Markush group construction has

been used, and this renders the claim vague and indefinite. According to MPEP § 2173.05(h), when materials are so related as to constitute a proper Markush group, they may be recited as, “wherein R is a material selected from the group consisting of A, B, C, and D,” or “wherein R is A, B, C, or D.” Since claims 2-13 depend from claim 1, they are subsumed under the rejection.

4. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear whether the total amount of 0.5-10 parts by mass refers to all three components (I), (II), and (III), or each individual component, or a combination thereof (*vide supra*, Markush group construction).

5. Claim 13 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 13 provides for the use of a rubber composition, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 13 is also rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7. Claims 1-3, 8, 9, 10, 12, and 13 are rejected under 35 U.S.C. 102(a) as being anticipated by JP 2002-069236 (Araki).

The prior art of Araki discloses a rubber composition comprising 100 pw of a rubber component, 0.1-1.0 pw of a thiuram compound or a dithiocabamate compound, and 0.5-2.0 pw of sodium 1,6-hexamethylene dithiosulfate dehydrate which is useful for the manufacture of a retreaded (pneumatic) tire (abstract). Paragraph [0017] shows that polybutadiene rubber and styrene-butadiene rubber. According to the inventor, tetrabenzylthiuram disulfide is a useful vulcanization promoter, (paragraph [0009], table), however, other compounds in which R<sub>1</sub>-R<sub>4</sub> are C<sub>1</sub>-C<sub>15</sub> alkyl may be used (description, formula (I)).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 1-3, 6-10, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-069236 (Araki) in view of JP 10-195237 (Fujiki).

The discussion of the disclosures of the prior art of Araki from paragraph 7 of this office action is incorporated here by reference. Araki contemplates use of styrene-butadiene rubber, but there is no indication of the nature of the styrene-butadiene rubber component. Fujiki also teaches use of sodium 1,6-hexamethylene dithiosulfate dehydrate as the vulcanization agent for styrene-butadiene rubber. According to the inventor, the heat resistant aging characteristic of the rubber is maximized when the styrene-butadiene rubber has a vinyl content of 35-85 % and when the styrene content is 30 % or less (paragraph [0009]). Regarding claims 1, 6, and 7, one of ordinary skill in the art, having both references at hand, would have found it obvious to use the styrene-butadiene rubber disclosed in Fujiki in the composition of Araki in order to achieve

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optimum heat resistant aging rubber properties. The combination of teachings is obvious because both patents relate to vulcanization of rubber using sodium 1,6-hexamethylene dithiosulfate dehydrate as the vulcanization agent. The subject matter of instant claims 2 and 3 is obvious over Araki which teaches thiuram disulfide compounds wherein  $R_1$ - $R_4$  are  $C_1$ - $C_{15}$  alkyl groups or benzyl groups (paragraph [0009]). With respect to claim 8, Araki also teaches use of the sodium salt of 1,6-hexamethylene dithiosulfate dehydrate, and thus, one of ordinary skill in the art would have found it obvious to select this particular compound. Claims 9, 10, and 12 are also obvious over Araki because the patent teaches use of these quantities of compound (abstract). Finally, claim 13 is also obvious since Araki teaches that the inventive compositions are useful for the manufacture of retreaded (pneumatic) tires (abstract).

11. Claims 4, 5, and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and if the rejection under 35 U.S.C. 112, second paragraph, is overcome by appropriate amendment. Neither of the cited references teaches use of dithiophosphate vulcanization promoters in combination with 1,6-hexamethylene dithiosulfates, and one of ordinary skill in the art would not have found it obvious to use the two in combination in order to arrive at the subject matter of the claims.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<http://pair-direct.uspto.gov>>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).



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April 11, 2005